

REMARKS

With entry of the present amendments, claims 21-37 and 40-42 are pending in the application. Claims 1-20 were previously cancelled. Claims 38 and 39 are currently cancelled. Claims 21, 30-34, and 36-37 have been amended. Claims 40-42 are new. Support for the amendments and new claims may be found throughout the specification as originally filed. The amendments to claim 1 simply include providing antecedent basis for “metal surfaces” and cancelling subject matter. The amendments to the remaining claims include cancelling subject matter. Support for new claims 40-42 may be found in at least original claim 21 and Table 2.

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

I. Rejections under 35 U.S.C. § 102(b)

Claims 21-39 stand rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by the following references: U.S. Pat. No. 5,723,430 (“Mihelic”), U.S. Pat. No. 4,983,317 (“Requejo”), U.S. Pat. Pub. No. 2003/0127111 (“Rouillard”), and U.S. Pat. No. 5,858,928 (“Aubert”).

Independent claim 21, from which the remaining rejected claims depend, recites a process for treating specific metal surfaces (aluminum, colored metals, or alloys thereof) with a corrosion inhibitor system, the corrosion inhibitor system comprising at least one alkyleneoxy-alkyl phosphate di- or triester compound of formula I. Claim 21 also recites that the treatment occur at a particular pH (> 7.0), a particular temperature (0 to 80°C), and for a particular time (10 s to 60 min). The present application includes data showing that the claimed compounds exhibit surprising anticorrosive properties under these conditions. Specifically, the data shows that the claimed compounds are capable of reducing the corrosion rate of a variety of metals by factors of about 2 to over 1000 more than conventionally used phosphate monoester compounds, including the phosphate monoester compound Triton H-66. These surprising and unexpected results are further discussed below.

A. Mihelic, Requejo, and Rouillard

Applicants respectfully traverse the rejections based on Mihelic, Requejo, and Rouillard for at least the following reasons. Regarding Mihelic, the Office asserts that use of the compositions 1 and 2 disclosed at column 7, example 1 of the reference anticipates claim 21. However, Applicants respectfully submit that nowhere does Mihelic teach the use of any specific compound falling within the claimed genus of alkyleneoxy-alkyl phosphate di- or triester compounds. Although compositions 1 and 2 of Mihelic include Triton H-66, this compound is an alkoxylated alkylaryl phosphate monoester. See Table 1 of the present application.

Regarding Requejo, the Office asserts that use of the composition A disclosed at column 6, example 1 of the reference anticipates claim 21. However, Applicants respectfully submit that nowhere does Requejo teach the use of any specific compound falling within the claimed genus of alkyleneoxy-alkyl phosphate di- or triester compounds. Composition A of Requejo includes Triton H-66. As discussed above, Triton H-66 is an alkoxylated alkylaryl phosphate monoester.

Regarding Rouillard¹, the Office asserts that the use of the composition of Example 4 disclosed in paragraph [0056] of the reference anticipates claim 21. However, Applicants respectfully submit that nowhere does Rouillard teach the use of any specific compound falling within the claimed genus of alkyleneoxy-alkyl phosphate di- or triester compounds. Example 4 of Rouillard simply refers to a generic alkylaryl alkoxy phosphate ester potassium salt. Given that Rouillard does not teach or suggest the use of any specific alkylaryl alkoxy phosphate ester potassium salts and does not teach or suggest the use of the di- or triester forms of the disclosed generic compound, Applicants respectfully submit that there exists no basis for inferring that Example 4 involved the use of a compound falling within the claimed genus of compounds. Since the Federal Circuit has held that “the identical invention must be shown in as complete

¹ Applicants note that Rouillard is not a prior art reference under 35 U.S.C. § 102(b) since the publication date of Rouillard is July 10, 2003, which is not more than one year before the priority date (March 23, 2004) of the present application.

detail as is contained in the...claim,” Rouillard fails to provide a *prima facie* case of anticipation against claim 21. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Because neither Mihelic, Requejo, nor Rouillard teaches each and every element of independent claim 21, Applicants respectfully request that the rejections of this claim, and any claims depending therefrom, be withdrawn.

Applicants further submit that neither Mihelic, Requejo, nor Rouillard render the process recited in independent claim 21 obvious. First, none of the references teaches or suggests the use of any phosphate di- or triester compounds and the only specific phosphate ester compound disclosed in the references is a phosphate monoester compound, Triton H-66. Second, Requejo actually teaches replacing Triton H-66 with a completely different class of compounds, alkali metal salts of certain cyclohexene carboxylic acids. In particular, composition A in Example I of Requejo is a control composition; Requejo is actually directed to the use of alkali metal salts of certain cyclohexene carboxylic acids. Requejo, col. 5, lines 1-16. Finally, the present application includes data showing that the claimed compounds exhibit unexpectedly superior anticorrosive properties as compared to a variety of phosphate monoester compounds, including Triton H-66.

Regarding these unexpectedly superior anticorrosive properties, Applicants respectfully direct the Office’s attention to Tables 1 and 2 of the present application. Table 1 lists several compositions: compositions G and H include the claimed compounds; compositions B-F are comparative compositions including various phosphate monoester compounds; and composition A is a comparative composition which does not include any phosphate ester compound. As described in pages 14-18 of the present application, various metal substrates were subjected to each of the compositions in Table 1 under controlled conditions in order to determine the anticorrosive properties of each composition. The results of these experiments are shown in Table 2. Table 2 shows that the corrosion rates of metals subjected to compositions G and H (which include the claimed compounds) are much smaller—by factors of at least 2 to over 1000 times smaller—than the corrosion rates of metals subjected to the comparative compositions B-F

(which include phosphate monoester compounds). For the Office's convenience, the results for composition B, which includes Triton H-66, and compositions G and H are reproduced in the table below. This table also provides additional columns showing the factor by which compositions G and H reduce corrosion rates as compared to composition B.

Table. Corrosion Rates of Various Metals Subjected to Compositions B, G, and H.

Metal	Corrosion Rate (mm/year) Composition B (Triton H-66)	Corrosion Rate (mm/year) Composition G (Phospholan PE65, claimed compound)	Reduction in Corrosion Rate	Corrosion Rate (mm/year) Composition H (Maphos P54, claimed compound)	Reduction in Corrosion Rate
Aluminum	32.15	0.09	357	0.03	1072
Copper	0.21	0.10	2	0.07	3
Brass	0.35	0.05	7	0.03	12
Zinc	0.94	0.16	6	0.17	6
Bismuth	0.014	0.003	5	0.002	7

The Table above shows that the claimed compounds (compositions G and H) are able to greatly reduce the corrosion rates of a variety of metals as compared to Triton H-66 (composition B). As shown in Table 2 of the present application, the claimed compounds are equally superior as compared to several other phosphate monoester compounds. Nothing in Mihelic, Requejo, nor Rouillard provides any basis from which those of ordinary skill in the art could have predicted that the claimed compounds would exhibit such superior anticorrosive properties. Accordingly,

the particular use of the compounds recited in the present claims cannot be considered obvious over Mihelic, Requejo, or Rouillard.

B. Aubert

As noted above, independent claim 21 recites a process for treating specific kinds of metal surfaces, comprising subjecting the metal surfaces to the claimed compounds at a particular pH and temperature and for a particular time. As thoroughly described above, the present application includes data showing that the claimed compounds exhibit surprising anticorrosive properties under these conditions.

Applicants respectfully submit that Aubert fails to anticipate the process recited in independent claim 21. In particular, Aubert fails to teach any processes in which the disclosed compositions are used to treat metal surfaces of aluminum, colored metals, or alloys thereof under the claimed conditions. Although Aubert states that the disclosed compositions may be used “as agents for industrial cleaning of hard surfaces,” a hard surface is not necessarily a metal surface, nor is a hard surface necessarily a metal surface of aluminum, colored metals, or alloys thereof. Because Aubert fails to explicitly or inherently teach each and every element of independent claim 21, Applicants respectfully request that the rejection of this claim, and any claims depending therefrom, be withdrawn.

Applicants further note that Aubert’s primary focus is the use of the disclosed compositions as drilling fluids for drilling through walls, concrete, sand, gravel, and soil. See Title, Abstract, and Examples. Not only does Aubert fail to teach or suggest the use of the disclosed compositions for treating the claimed metal surfaces under the claimed conditions in order to inhibit the corrosion of such surfaces, but also, given the very different focus of Aubert, the reference fails to provide those of ordinary skill in the art with any expectation that the claimed compounds would exhibit the superior anticorrosive properties shown in the present application. Accordingly, the particular use of the compounds recited in the present claims cannot be considered obvious over Aubert.

II. Rejections under 35 U.S.C. § 103(a)

Claims 21-39 stand rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over U.S. Pat. No. 6,310,024 (“Gill”), U.S. Pat. No. 7,569,532 (“Man”), or both. Applicants respectfully traverse.

A. Gill

Applicants respectfully submit that Gill fails to render independent claim 21 obvious. Not only does Gill fail to teach or suggest the use of any specific compound falling within the claimed genus of alkyleneoxy-alkyl phosphate di- or triester compounds, but also, the reference fails to teach or suggest the use of any phosphate di- or triester compounds at all. Gill only generically discloses the use of “phosphate esters” and only specifically discloses the use of Triton H-66, a phosphate monoester compound. As thoroughly discussed above, the present application provides data showing that the claimed compounds exhibit surprisingly superior anticorrosive properties as compared to Triton H-66. In particular, the data shows that the claimed compounds are capable of reducing the corrosion rate of a variety of metals by factors of about 2 to over 1000 more than Triton H-66. Gill simply fails to provide any basis from which those of ordinary skill in the art could have predicted that the claimed compounds would possess this superior property. Accordingly, the particular use of the compounds recited in the present claims cannot be considered obvious over Gill. For at least these reasons, Applicants respectfully request that the rejection of independent claim 21, and any claims depending therefrom, be withdrawn.

B. Man

Applicants respectfully submit that Man fails to render independent claim 21 obvious. As thoroughly discussed above, the phosphate di- and triester compounds recited in claim 21 possess unexpectedly superior anticorrosive properties for the claimed metals as compared to numerous phosphate monoester compounds. Even if Man suggests the use of linear alcohol alkoxylate

phosphate di- and triester compounds in a process for cleaning surfaces, the reference fails to provide any basis from which those of ordinary skill in the art could have predicted that the claimed compounds would possess superior anticorrosive properties for the claimed metals as compared to their monoester counterparts. Accordingly, the particular use of the compounds recited in the present claims cannot be considered obvious over Man. For at least this reason, Applicants respectfully request that the rejection of independent claim 21, and any claims depending therefrom, be withdrawn.

III. New Claims

New claims 40-42 depend from independent claim 21. For the reasons discussed above, Applicants respectfully submit that claim 21 is patentable over the cited references. Accordingly, Applicants submit that claims 40-42 are also patentable. Applicants further note that claims 40-42 are closely aligned to those phosphate compounds and metals used in the examples of the present application. As thoroughly discussed above, these examples show that the claimed compounds exhibit surprising anticorrosive properties which simply could not have been predicted from the disclosure of the cited references.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of

papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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